other worthy contributions to this special number. Suffice it to say that across the horizon of tomorrow awaits the opportunity for organized medicine to create a healthier America; to prevent the recurrence of the situation that found one out of four persons physically or mentally unfit. Since man spends his greatest span of years either in school or at work, the task of maintaining national optimum health must to a great degree be entrusted to industry and our schools. There is increasing evidence that Industrial Medicine is aware of its opportunity.

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PART I

THE INTER-RELATIONSHIPS OF SELECTIVE PLACEMENT AND REHABILITATION*

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THE increased wartime need for maximal utilization of manpower has created great interest in proper selective placement at work and the forthright rehabilitation of those requiring it. There is, nevertheless, some confusion as to the respective fields covered by placement and rehabilitation, as such, and considerable misuse of terms.

Every worker needs correct placement at work in accordance with his skills and physical capacities. In fact, he needs much more than that. The International Labor Office's recent "Declaration of Philadelphia"[1] advocates that among the nations of the world there be the development of programs which will achieve "the employment of workers in the occupations in which they can have the satisfaction of giving the fullest measure of their skill and attainments, and make their greatest contribution to the common well-being." This point of view emphasizes the value of a selective placement technique which is suitable for *all* workers, and which does not, as some techniques do, single out handicapped persons.

Only handicapped persons require vocational rehabilitation, which may be defined as a service for creating or recreating earning capacity for all types of physically or mentally handicapped persons through vocational adjustment. Rehabilitation applies to those handicapped persons who cannot return to previous employment, or cannot readily be placed at other available work.[2] In some instances, rehabilitation aims to improve upon a disabled worker's previous earning power.

After a person has been vocationally rehabilitated he will require selective placement at work. To effect selective placement an evaluation of the physical capacities of any worker, disabled or fully able-bodied, is necessary. It is also necessary to evaluate the physical capacities of any prospective candidate for rehabilitation in order to determine whether he can return to former employment or to any other available job; whether the candidate's condition is relatively stable, and what the prognosis is. Since vocational rehabilitation requires time and expense, only those candidates should be recommended for rehabilitation whose probable length of employment or future earnings at the prospective work will justify the effort.

WHEN PHYSICAL EVALUATION IS NECESSARY

Evaluation of a worker's physical capacities in respect to a prospective job is, therefore, necessary (1) in originally placing any person at work or in transferring him from one job to another job within the organization; (2) in deciding whether a disabled person can return to a previous job or be placed on another suitable job and, if not, whether vocational rehabilitation for some new job is justified; (3) in planning a person's rehabilitation; and (4) in placing the individual after rehabilitation. Hence, a technique for evaluating the physical capacities of a worker is needed which can be related to the physical demands of a prospective job. Such a technique, known as *Physical Demands and Capacities Analysis*, has been developed at the Permanente Foundation Hospital in conjunction with the regional office of the War Manpower Commission in San Francisco, for the selective placement of Kaiser Shipyard workers at the time of transfer to new shipyard jobs. The technique has been described elsewhere.[3,4,5,6]

In brief, a physical capacities analysis of the worker evaluates what the worker can do in respect to a number of physical factors, such as lifting, carrying, pushing or pulling, and in respect to a number of environmental factors, such as working inside or outside, or working under high or low temperatures. The physical demands analysis of a job evaluates what the job requires in respect to the same physical factors and in respect to the same environmental factors. Hence, a common pattern is used for analyzing both worker and job.

* One of several papers in a Symposium on "Industrial Medicine in Wartime—the Widening Field of Industrial Medicine." Papers collected by Rutherford T. Johnstone, M. D.

From the Permanente Foundation Hospital.

The practicing physician, however, wants to know how much can the cardiac lift or under what environmental conditions can he work. Given any diagnosis, how can the physician translate clinical data in terms of physical capacities? That is a pertinent question. At the present time and until more is known concerning the relationship between clinical data and physical capacities, the physician's judgment is probably the best criterion. It is, nevertheless, progress to clarify the problem for, whenever a physician passes upon a man's ability to work at some job, whether the physician is aware of it or not, he is really translating clinical data into a physical capacities analysis.

Experience with the formal technique of physical demands and capacities analysis has found us relying on certain criteria. For example, in the placement of cardiacs the physical examination, electrocardiogram, chest x-ray for heart size, and past history in respect to arduousness of work, are all taken into account. Tabulation of criteria for guidance of staff physicians has been done for hypertensive heart disease, coronary arteriosclerotic heart disease, rheumatic heart disease, syphilitic aortic valvular disease, and congenital heart disease.[7] For rheumatic heart disease, for example, the following criteria apply:

A patient with rheumatic heart disease, because of the rheumatic diathesis, should also avoid wet quarters, sudden temperature changes, and perhaps the night shift.

Previous approaches to the problem of selective placement of handicapped persons at work have resulted chiefly in the preparation of lists of jobs which individuals with specific handicaps can perform, such as jobs for one-armed persons, or in classifications of handicapped people with reference to type of work to be done, as workers who must avoid hazardous machinery. Before these systematic approaches physicians usually recommended work in general terms, such as heavy, moderate, light, sedentary, or no work. Such statements were subject to broad interpretation and to misinterpretation. It is believed that from what has been said, the reader will agree the adoption of the identical pattern for analyzing both worker and job has decided advantages.

NATIONAL ADOPTION OF CAPACITIES ANALYSIS

There are already signs of the national adoption of the fundamental principle of employing the same pattern for analyzing worker and job as a selective placement technique. The Associated Industries of New York State have just published a pamphlet for member companies.[9] The American Mutual Alliance, representing companies engaged nationally in the field of casualty insurance, has published a similar treatise.[10] The Associaiton of Casualty and Surety Executives, representing stock companies, has recently issued a declaration of attitude on the employment of handicapped workers, affirming the philosophy that handicaps are of degree only—*who is without one?*—and that with proper placement nearly all handicaps to employment resolve themselves.[11]

The great interest in rehabilitation and placement means the more effective utilization nationally of all workers—male or female, young or old, emotionally stable or unstable, able-bodied or physically handicapped, and particularly the war disabled. Placement of the veteran, in the final analysis, does not present a problem different from the placement of any other person. His successful placement at work requires due regard for the physical demands of the job, and for the physical and emotional environment. A former machine gunner, who has suffered from an anxiety neurosis, should not be given a job next to a riveter. It is generally agreed, however, that we should not be unduly paternalistic in handling the veteran and that the most important single factor for insuring his employment with safety is selective placement.

Never before has there been such need for the physician to translate effectively clinical data into physical evaluation. Research will be needed to develop new techniques for assisting the physician in this work. There are already indications that such research will be forthcoming. It will be of great value in effecting the proper utilization of manpower.

SUMMARY

Only handicapped persons require vocational rehabilitation, but all persons require selective placement at work. Both rehabilitation and selective placement involve physical evaluation. The physician's rôle is to translate clinical data into physical capacities analysis.

Broadway and MacArthur Boulevard, West.

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Work Recommendations For Cardiac Patients
With Rheumatic Heart Disease
(Illustrative of the Manner All Cardiac Patients Are Handled)

*Therapeutic Classification**	*Work Recommendations*
Class A Recovered case (Definite history but no diagnostic signs). Apical systolic murmur. No cardiac enlargement or abnormality of contour.	No Restrictions.
Class B Class I** (No symptoms on ordinary activity). Mitral stenosis with regular rhythm. Slight cardiac enlargement or left auricular prominence. (X-ray diagnosis readily made.) Right axix deviation by EKG.	50 per cent of Normal Activity.
Class C Class II (Symptoms on ordinary activity). Auricular fibrillation. Well developed mitral stenosis. Aortic stenosis. Moderate cardiac enlargement.	25 per cent of Normal Activity.
Class D Class III (Symptoms on less than ordinary activity). History of one failure (may be given special consideration if failure was due to active rheumatic myocarditis). Marked cardiac enlargement.	Sedentary Work
Class E Class IV (Symptoms at rest). Active rheumatic fever (as determined by resting apical rate over 100, persistent leucocytosis, anemia, rapid sedimentation rate, joint pains, or EKG evidence). Left ventricular strain. Aortic regurgitation with history of failure.	No Work.

* The therapeutic classification (A, B, C, D, and E) follows that of the American Heart Association.[8]
** Numerals represent the functional classification of the American Heart Association.[8]

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HOW MAY A WORKER RECEIVE ADEQUATE MEDICAL CARE?*

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IS it necessary to consider the problem of medical care for a worker as being different from that for other persons? A worker is a member of a community in the same sense as other members of his family or any other individual, whether or not he produces goods or services for which he receives pay from the management of a plant or facility. In this sense there is no reason for considering that medical care for a worker should differ from that available to other members of his community.

There are several factors, however, with which a worker must contend that do differentiate him from other members of his community. When he loses time from his job, through illness or injury, he loses income for himself and those who depend upon him. Furthermore, his absence from his job constitutes an economic loss to his employer. Thus, industry, as well as the community, has an interest in proper medical care for workers. For this reason, it is proper to consider medical care for workers as a specialized problem.

WHAT IS AVAILABLE?

What is available for a worker in the way of medical care? In a large factory or industry there is usually a management-controlled medical or first aid department for the care of occupational injuries and diseases. Rules and regulations promulgated by the insurance carriers and by the State agencies supervising industrial hygiene, tend to standardize the quality of care in a large industry to the acceptable minimum.

Under the supervision of an experienced full-time Industrial physician, the occupational hazards of workers are, as a rule, very well cared for. Because of the many factors involved in industrial medical care, a part-time physician cannot satisfactorily fulfill his obligation either to the worker or to management. If the industrial physician in a plant is there part time because he has several small industries to care for, and if this type of work is all he does, and if he has properly trained nurses on his staff, he can give the worker adequate occupational medical care.

The physician who is in private practice and merely "takes on a little industrial work" to supplement his income (and I know of not many who do so for any other reason) is a menace to Industrial Medicine, for his interest is not in it. He does not comprehend the problems of factory work, nor does he choose to soil either his clothes or his mind in the study of these problems, first-hand.

The proper care of occupational injuries and illnesses begins first with their prevention. Then there must be the proper first-treatment. Following this, the decision must be made whether or not the condition is occupational, then if it is compensable, then if time away from the job should be ordered or a transfer to a different job. Next, the proper time of return to work must be judged, and whether to the same or to a different job. An honest evaluation of disability must be made and finally a follow-up to ascertain the accuracy and effectiveness of diagnosis, treatment, disability evaluation, rehabilitation and proper placement. Analysis must be made of the circumstances surrounding the accident or illness, to the end that a repetition may be avoided. Records must be established and maintained for management, insurance carriers and state agencies, and these must be filed for reference until the Statute of Limitation expires.

Unless these minimum requirements for occupational conditions are observed, the worker is not receiving adequate industrial medical care. These things he must have, because he is not only a member of the community, but an economic factor in integrated production. Collectively, workers represent millions of man-hours, and when they are ill or injured, billions of dollars are lost to employees and management alike.

So far, we have discussed only the in-plant care for workers suffering occupational injuries or illnesses. Why this is a specialized job for a medical supervisor is obvious.

CARE OTHER THAN IN-PLANT SUPERVISION

What of the fact that 90 per cent or more of conditions which affect a worker's efficiency occur outside and away from the plant? Does this imply that the industrial physician should look beyond the plant to see that proper medical care is supplied the worker for nonoccupational conditions because of their effect upon his occupational efficiency? If he does so, he has the following choices:

1. To extend medical care through having a full-time staff employed by management take over complete medical supervision of the worker. This can be paid for by management, the worker, or both.

2. To extend this care still further to take in the worker's family, and thus achieve a maximum feeling of security from economic loss on the part of the worker.

3. To provide group insurance for workers so they may have partial reimbursement for loss of time and a freer choice of physician. There is one definite drawback to the average group insurance policy, in that most companies will pay bills rendered by any practitioner, whether an M. D. or otherwise, and there is justifiable doubt that this constitutes adequate medical care.

4. The industrial physician can utilize for his workers the services of such groups as the Blue Cross, the C. P. S., and others. This ideally should be supplemented by a personal knowledge on the part of the cooperating physicians outside of the plant of general conditions within the plant. Certainly, when these outside physicians suggest changes in conditions of work, these should be discussed first with the industrial physician.

5. The industrial physician can work out a policy with the reputable members of the regular local medical society for the care of all nonindustrial conditions which affect his workers' efficiency. These "outside" doctors will then constitute an extension of the plant medical staff, or the plant medical staff can be considered an extension of the community medical group specializing

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